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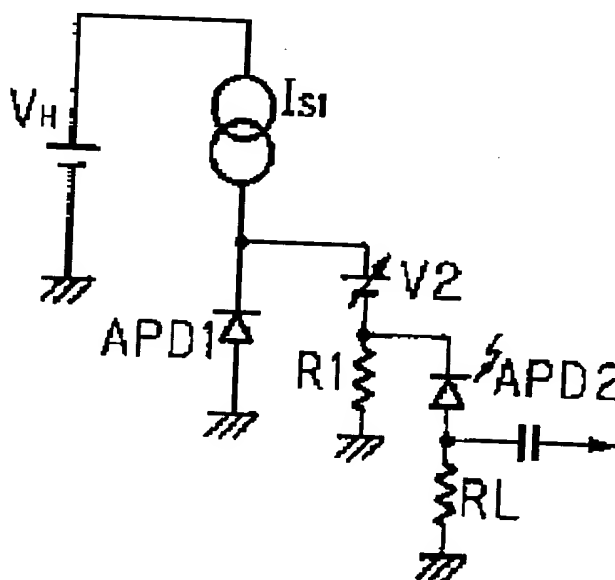
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## (54) BIAS CIRCUIT OF AVALANCHE PHOTODIODE

(57) Abstract:

**PURPOSE:** To perform the detection of light in high stability by applying the voltage, wherein the difference of the voltages at both ends at the time of breakdown is constant, in a diode having the temperature characteristic at the same breakdown voltage to the bias of an avalanche photodiode.

**CONSTITUTION:** An avalanche photodiode APD1 for temperature detection, which is shielded against light, undergoes breakdown by making a constant current  $I_{s1}$  flow from a power supply  $V_H$ . The breakdown voltage generated across both ends is dropped by a specified voltage  $V_2$ . The voltage is applied on an avalanche photodiode APD2 for signal detection as the bias voltage. The diodes APD1 and APD2 are thermally connected so as to obtain the same temperature. Thus, the bias voltage is changed by the same amount as the change in breakdown voltage of the diode APD1 caused by temperature. In this way, the temperature change in multiplication factor of the diode APD2 is



suppressed, and the stable detection of  
the light can be performed.

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